

### REMARKS

Claims 1-4, 6-14 and 20-34 are pending in the application, with claims 1, 10, 22 and 30 being independent. The specification has been amended to correct a minor error in the identity of the reference being described by the amended portion of the specification. No new matter has been introduced.

Claims 1-4, 6-14, 26 and 27 have been rejected as being unpatentable over the admitted prior art in view of Izu (U.S. Patent No. 4,410,558) or Sando (U.S. Patent No. 4,479,369), and claim 20-25 and 28-34 have been rejected as being unpatentable over admitted prior art in view of Izu or Sando, Komino (U.S. Patent No. 6,156,151) and Yamazaki (U.S. Patent No. 4,808,553).

#### **Rejections based on the admitted prior art, Izu, Komino and Yamazaki**

The admitted prior art does not describe or suggest a gas supply or exhaust structure arranged such that gas is introduced in a direction parallel to the direction in which the substrate moves so that the flow of gas is rectified away from a film formation surface of the substrate.

Claim 1, for example, is directed to a plasma CVD apparatus that includes a vacuum chamber; an exhaust means for exhausting gas from the vacuum chamber to an outside; an electrode for supplying electric energy inside the vacuum chamber; and a support that supports a substrate opposing the electrode as the substrate is moved in a first direction through the chamber. The apparatus also includes an introducing port for gas that is located between the electrode and the substrate such that gas is introduced into the chamber in a direction parallel with the first direction so that a flow of gas is rectified in a direction away from a film formation surface of the substrate. Claim 1 further recites that openings are located on a surface of the electrode opposing the substrate, and that the gas is exhausted from the openings to the outside of the vacuum chamber.

The admitted prior art shows directing a gas toward the substrate through openings in a electrode (Figs. 2A and 2B and page 3, line 16 to page 4, line 3) or passing the gas along the surface of a substrate (Fig. 3 and page 4, line 24 to page 5, line 15).

Directing the gas toward the substrate, as shown in Figs. 2A and 2B, certainly does not constitute introducing gas in a direction parallel to a direction in which the substrate moves.

Passing the gas along the surface of the substrate, as shown in Fig. 3, does not constitute introducing the gas in a direction parallel to the direction in which the substrate moves so that the flow of gas is rectified away from a film formation surface of the substrate. When the gas is passed along the surface of the substrate, the admitted prior art notes that, due to turbulence, gas flows toward the surface of the substrate (see page 5, lines 1-5). Thus, the admitted prior art does not show the recited gas supply or exhaust structure arranged such that gas is introduced in a direction parallel to the direction in which the substrate moves so that the flow of gas is rectified away from a film formation surface of the substrate.

In response to this argument, the Examiner indicates that "the right hand side" of Fig. 3 indicates that the gas flows "in a direction away from the substrate". However, claim 1 does not merely recite that the gas flows in a direction away from the substrate. Rather, claim 1 recites that the flow of gas is rectified in a direction away from the film formation surface of the substrate. As discussed at page 4, line 24 to page 5, line 15 of the application, Fig. 3 simply does not show such rectification of the gas flow away from the substrate. Accordingly, for at least this reason, the rejection should be withdrawn.

Moreover, as clarified by the amendment to the specification, Fig. 3 and the associated text in the specification relates to Japanese Examined Patent Application Publication No. Sho 62-43554, which corresponds to U.S. Patent No. 4,400,409, which also names Izu as an inventor. An examination of the '409 patent reveals that there is no discussion of either an introducing port for gas that is located between the electrode and the substrate such that gas is introduced into the chamber in a direction parallel with the first direction, or of having a flow of gas introduced in a parallel direction and rectified in a direction away from a film formation surface of the substrate.

There would have been no motivation to combine the admitted prior art with Izu, Sando, Komino and Yamazaki in the manner set forth in the rejection.

Recognizing the failure of the admitted prior art to describe or suggest the exhaust arrangements recited in the independent claims, the rejection relies upon Izu and Sando as doing so. In particular, in Izu, the rejection points to the manifolds 52 that introduce gas in a direction

perpendicular to a direction in which the substrate moves, and an exhaust port 56 that exhausts the gas through openings in an electrode 58. Thus, Izu does not describe or suggest introducing the gas in a direction parallel to a direction in which the substrate moves.

a. The rejection does not provide sufficient motivation for combining Izu and the admitted prior art.

The rejection notes that the motivation to combine the admitted prior art with Izu would have resulted from a desire to have the resulting structure allow for a "uniform distribution of the gas across the entire substrate" and to "maintain a uniform flow of the gas." However, neither Izu nor the admitted prior art indicates that such benefits would result from introducing gas in a parallel direction or exhausting gas from openings in the electrodes, and accordingly, the desire for such benefits cannot be used as a motivation to combine the references to produce a system including those features. (While Izu mentions a desire for uniform gas flow at col. 5, lines 17-20, Izu also states that this desire is met by including a large number of feed apertures.) Accordingly, the rejections should be withdrawn for at least this reason.

b. The rejection ignores the failure of both Izu and the admitted prior art to describe or suggest parallel introduction in the manner recited in the claims.

In response to applicant's prior arguments that none of the cited prior art describes or suggests introducing the gas into the chamber "in a direction parallel with said first direction so that a flow of said gas is rectified in a direction away from a film formation surface of the substrate," the Examiner asserts that the applicant has merely recognized another advantage which would flow naturally from following the suggestion of the prior art, and that this cannot be the basis for patentability when the differences would otherwise be obvious. Applicant respectfully disagrees with this conclusion, as there is no suggestion in the prior art to introduce the gas in a direction parallel with the first direction and so that a flow of gas is rectified in a direction away from a film formation surface of the substrate. As has been noted, this feature is advantageous in that the fine particles and fragmented particles are not deposited onto the film formation surface. Izu describes a system in which gas is introduced in a direction normal to the first direction. The admitted prior art describes as problematic a system in which the gas is

introduced in a direction parallel to the first direction. As such, nothing in the admitted prior art or Izu would have led one of ordinary skill in the art to modify Izu's approach to adopt parallel gas introduction, let alone parallel gas introduction in combination with rectifying a flow of gas in a direction away from the film formation surface. Accordingly, the rejections should be withdrawn for at least this reason.

**Rejections based on the admitted prior art, Sando, Komino and Yamazaki**

In general, the arguments presented above with respect to Izu are largely applicable to Sando, which is directed to an apparatus for treating textiles. In particular, like Izu, Sando (a) provides no motivation to modify the system of the admitted prior art in the manner set forth in the rejection, (b) does not describe or suggest parallel introduction in the manner recited in the claims, and (c) is directed to a different type of system than that of the admitted prior art and the other references and, as such, would not be readily combined with those references.

As to point (a), there simply is nothing in Sando that would have led one of ordinary skill in the art to modify the system of the admitted prior art. (Nor does the rejection identify any such motivation in Sando.)

As to point (b), Sando describes introducing a gas through a gas nozzle located on one side of a cloth to be treated in a direction perpendicular to a direction in which the cloth moves, and removing the gas through a gas exhaust duct located on the opposite side of the cloth to be treated.

As to point (c), Sando is directed to an apparatus for treating textiles, and is entirely unrelated to a plasma CVD apparatus such as is shown in the admitted prior art.

In addition, while the rejection asserts that Sando describes a mesh-like exhaust port 58, this does not appear to be the case. In particular, applicant was unable to find any reference in Sando to such a mesh-like exhaust port or to a reference label 58. (Applicant notes that the use of reference label 58 appears to be intended to refer to the electrode 58 of Izu.)

Accordingly, for at least these reasons, the rejections should be withdrawn.

Applicant notes that, while the arguments present above with respect to Sando were raised in applicant's prior reply, the Examiner has not addressed the merits of those arguments with the exception of merely asserting that, for the reasons presented with respect to Izu, "the

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Sando reference is also appropriately used and therefore rejections with respect to this reference are also maintained."

Applicant submits that all claims are in condition for allowance.

The fee in the amount of \$450 in payment of the two-month extension fee is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 9/4/07

  
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